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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/344,299	06/24/99	SCHWARTZ	S 1538/20

SHAWN W O'DOWD
KENYON & KENYON
333 W SAN CARLOS STREET
SUITE 600
SAN JOSE CA 95110

WM02/1109

EXAMINER

PENDLETON, B

ART UNIT

PAPER NUMBER

2644

DATE MAILED:

11/09/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/344,299

Applicant(s)

SCHWARTZ ET AL.

Examiner

Brian T. Pendleton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 33-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-11, 19-22, 24, 25 and 28-32 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 12-18, 23, 26 and 27 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-32 are drawn to a system and method for modifying a signal with respect to a detected noise signal, classified in class 381, subclass 94.1.
- II. Claims 33-35 are drawn to a method of modifying signals using band pass filters, classified in class 381, subclass 98.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the signal processors effect the noise and wanted signals in such a fashion to decrease the noise content. The subcombination has separate utility such as creating a signal effect without the need for noise cancellation and the inclusion of a noise pickup microphone.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Mr. Shawn O'Dowd on 10/25/00 a provisional election was made not to traverse to prosecute the invention of group I, claims 1-32. Affirmation of this election must be made by applicant in replying to this Office action. Claims 33-35 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites the limitation "said gain" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 19, 20, 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura, US Patent 4,932,063. Nakamura discloses a noise suppression apparatus having a first signal I_p (1), alternate signal I_r (2), first and second signal processors in band pass filter bank 5, and combiner 12 which corrects for amplitude difference of the noise components found in both signals. As shown in equations 3 and 4, the increase in one signal amplitude results in the decrease of other signal's amplitude, thereby meeting claims 1, 2, 5, 19, 20, and 22.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 24, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura. Nakamura discloses a noise suppression apparatus having a first signal I_p (1), alternate signal I_r (2), first and second signal processors in band pass filter bank 5, and combiner 12 which corrects for amplitude difference of the noise components found in both signals. As shown in equations 3 and 4, the increase in one signal amplitude results in the decrease of other signal's amplitude. However, Nakamura does not disclose that the noise suppression apparatus is used for instruments (per claims 8 and 24) and a guitar (per claim 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the noise

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suppression method and apparatus of Nakamura for any instrument that when played would have interfering noise. Furthermore, any system that has a sound source that can be picked up by a main microphone and has accompanying noise sources can take advantage of a noise suppression method disclosed by Nakamura, as any one of ordinary skill in the art would have known at the time of invention.

Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Suda, US Patent 5,939,656. Nakamura discloses a noise suppression apparatus having a first signal I_p (1), alternate signal I_r (2), first and second signal processors in band pass filter bank 5, and combiner 12 which corrects for amplitude difference of the noise components found in both signals. As shown in equations 3 and 4, the increase in one signal amplitude results in the decrease of other signal's amplitude. However, Nakamura does not disclose adjusting the level of the first and alternate signals prior to the signal processors. However, it was obvious to one of ordinary skill in the art at the time of the invention to use a pre-amplifier prior to equalizing signals as taught by Suda in figure 2. Pre-amplifiers boost the signal level in order for a listener to better hear, an advantageous feature.

Claims 4 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura. Nakamura discloses a noise suppression apparatus having a first signal I_p (1), alternate signal I_r (2), first and second signal processors in band pass filter bank 5, and combiner 12 which corrects for amplitude difference of the noise components found in both signals. As shown in equations 3 and 4, the increase in one signal amplitude results in the decrease of other signal's amplitude. However, Nakamura does not

disclose that the level of the wanted and unwanted signals in the selected frequency bands are adjusted separately. However, it is the Examiner's contention that adjusting the levels separately rather than jointly, as disclosed by Nakamura, does not produce unexpected results. Such decision, to treat the signals separately, represents an obvious design choice one of ordinary skill in the art would have made at the time of invention.

Claims 10-11 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Barber, Jr. et al, US Patent 4,201,107. Nakamura discloses a noise suppression apparatus having a first signal I_p (1), alternate signal I_r (2), first and second signal processors in band pass filter bank 5, and combiner 12 which corrects for amplitude difference of the noise components found in both signals. As shown in equations 3 and 4, the increase in one signal amplitude results in the decrease of other signal's amplitude. As stated above, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the technique taught by Nakamura for instruments. In view of that teaching, one would have been motivated to use Nakamura's system for a snare drum. Barber, Jr. et al teach having a microphone with a snare drum. It would have been obvious to one of ordinary skill in the art at the time of the invention to include a noise microphone above the drum in addition to the main microphone 20 in Barber, Jr. et al for the purpose of providing noise reduction. Per claim 11, it would have been an obvious design choice to one of ordinary skill in the art at the time of invention to pre-set the ratio of the gain of the alternate signal to between 11 and 5 dB lower than the first signal. Without undue experimentation, one could have

set the gain yielding the highest fidelity and figured out the range specified by the applicant in claim 11.

Claims 28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Barger et al, US Patent 5,809,843. Nakamura discloses a noise suppression apparatus having a first signal I_p (1) , alternate signal I_r (2), first and second signal processors in band pass filter bank 5, and combiner 12 which corrects for amplitude difference of the noise components found in both signals. As shown in equations 3 and 4, the increase in one signal amplitude results in the decrease of other signal's amplitude. However, Nakamura does not disclose that one microphone is an acoustic pressure microphone and the other is an accelerometer pickup. Barger et al disclose a noise cancellation device for a gear mesh with a vibration sensor which can be an accelerometer pickup. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the microphone of Barger et al in the invention of Nakamura since it was taught that accelerometer pickups can be used in noise reduction or cancellation.

Claims 29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Duncan, US Patent 4,524,667. Nakamura discloses a noise suppression apparatus having a first signal I_p (1) , alternate signal I_r (2), first and second signal processors in band pass filter bank 5, and combiner 12 which corrects for amplitude difference of the noise components found in both signals. As shown in equations 3 and 4, the increase in one signal amplitude results in the decrease of other signal's amplitude. However, Nakamura does not disclose that one microphone is an

acoustic pressure microphone and the other is an electromagnetic pickup. Duncan discloses electromagnetic pickups for a string instrument effecting noise cancellation. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the microphones of Duncan in the invention of Nakamura since it was taught that accelerometer pickups can be used in noise reduction or cancellation.

Allowable Subject Matter

Claims 6-7, 12-18, 23, and 26-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claim 6 further limits claim 5 by adding that a first group of signal processors are coupled in series to process the noise (unwanted signal) while a second group of signal processors are coupled in parallel to process the wanted signal. Claim 23 also has this limitation. This limitation is neither disclosed nor taught in the prior art of record. Claims 12 and 26 stipulate that the signal processors are one high-pass filter and one low-pass filter. This combination of filters is not found nor disclosed in the art of record with respect to noise cancellation.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (703) 305-9509. The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-9508 for regular communications and (703) 308-5403 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Brian T. Pendleton
Examiner
Art Unit 2644

btp
November 3, 2000


FORESTER W. ISEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2700